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## Journal of the Society of Arts.

FRIDAY, DECEMBER 14, 1860.

INTERNATIONAL EXHIBITION OF  
1862.

His Grace the Duke of Newcastle, Secretary of State for the Colonies, has transmitted to the Council of the Society a copy of a letter addressed to his Excellency the Governor of Jamaica by the Council of the Royal Society of Arts of that Colony, evidencing the desire of

that Society that the Colony should be worthily represented in the approaching Exhibition. The following is an extract from this communication:

"The Council are feelingly alive to the good that will probably result to Jamaica from an abundant illustration of the resources of this Island in the said Exhibition, by an accumulation of specimens of the natural and artificial products of the country.

"The Council have determined to use every exertion in their power to render this department entirely and every way creditable to this Island; if the means are afforded them by the Island Legislature, they will allow nothing to interfere with their transmission to the said International Exhibition such an amount of Island products as shall win for the Colony similar honours to those achieved for her by the Society at the Great Paris Exhibition of 1855."

## GUARANTEE FUND FOR THE EXHIBITION OF 1862.

The following additions have been made to the List of Guarantors and of the sums guaranteed since the announcement in the *Journal* for December 7 :—

\*.\* The names marked with an asterisk are those of Members of the Society of Arts.

NAMES.	AMOUNT.	REPRESENTING THE OBJECTS OF THE SOCIETY—ARTS, MA- NUFACTURES, AND COMMERCE.
Amount announced last week ... ..	£367,900	
*The Earl Granville, K.G., 16, Bruton-street ... ..	1,500	Arts.
*Robert Rumney, Ardwick Chemical Works, Manchester ... ..	100	Commerce.
*John Murray, 7, Whitehall-place, S.W. ... ..	1,000	Arts.
Total ... ..	£370,500	

By ORDER, P. LE NEVE FOSTER, Secretary.

EXAMINATIONS, 1861. — NOTICE TO  
INSTITUTIONS AND LOCAL EDUCA-  
TIONAL BOARDS.

The attention of Secretaries of Institutions and Local Boards is specially called to Par. 5 of the Programme of Examinations for 1861, as follows :—

5. A detailed list of the chairman, secretary, and other members of each Local Board, giving not only their names but their addresses and designations, should be submitted to the Council of the Society of Arts before the 1st of January, 1861. In some cases the Local Educational Boards comprise such large districts that for the convenience of the Candidates, Branch Local Boards have to be formed within the Districts. Wherever this is the case, the names and addresses of the members, both of the District Board and of its Branch Boards, must be forwarded to the Secretary of the Society of Arts. All changes in the composition of the various Boards now in existence, or to be formed hereafter, should be immediately notified to the Society of Arts.

Hundred-and-Seventh Session was held on Wednesday, the 12th inst., Sir Thomas Phillips, F.G.S., Chairman of the Council, in the chair.

The following gentlemen were proposed for election as Members of the Society :—

Bacon, Jacob Perkins ...	69, Fleet-street, E.C.
Brown, Henry .....	Market-street, Bradford.
Cheere, Robert .....	31, York-terrace, Regent's- park, N.W.
Clifton, Edward Norton	47, Upper Harley-street, W.
Jeffery, Wm. J. ....	9, Regent-street, S.W.
Morley, Henry .....	4, Frederick-villas, East Brix- ton, S.
Pike, Ebenezer .....	Cork.
Roberts, Joseph .....	7, Old Jewry, E.C.
Whitchord, John .....	16, Walbrook, E.C.

The following candidates were balloted for and duly elected members of the Society :—

Chandos, the Marquis of...	Wotton, near Aylesbury.
Cornforth, John .....	Berkley-street Mills, Bir- mingham.
Fairbairn, Thomas .....	Northwood, Manchester.
Hunt, John ....	156, New Bond-street, W.
Millar, John, M.D. ....	Bethnal-house, Cambridge- heath, N.E.

## FOURTH ORDINARY MEETING.

WEDNESDAY, DECEMBER 12, 1860.

The fourth Ordinary Meeting of the One

Nicholls, G. P. .... { Aldine-chambers, Paternoster-row, E.C.  
 Roskell, Robert ..... 156, New Bond-street, W.  
 Yolland, Col. W., R.E.... 17, Westbourne-park, W.

The CHAIRMAN expressed regret at the absence of the Right Honourable W. E. Gladstone, M.P., who had kindly signified his willingness to preside that evening, if not prevented by absence from town.

The Paper read was—

#### ON ITALIAN COMMERCE AND MANUFACTURES.

By PROFESSOR LEONE LEVI, BARRISTER-AT-LAW.

A new era has at last dawned on the political and economical condition of Italy. Suddenly and unexpectedly has she risen from a state of torpor and hopeless depression to a living, energetic, and dignified assertion of her title to be ranked among the leading nations in Europe. Most favourably placed by her geographical position in the very heart of the eastern hemisphere, rich in her productions, abounding in sea coasts, with excellent harbours in the Adriatic and Mediterranean, bordering on immense inland countries, and with a population, on the whole, intelligent and industrious, there is no valid reason why Italy should not occupy in the nineteenth century a position, at least as high, as in the thirteenth and sixteenth centuries.

The spirit of commercial enterprise which once prompted the Italian traders to undertake daring adventures in the East, must, it is true, find new fields of activity; the superior advantages of their position, and their exclusive command over rich and unexplored markets are, doubtless, for ever lost to them; the Europe of the nineteenth century is not the Europe of the middle ages. Other nations have risen. Communications by sea and by land are now open between the most distant countries. And the entire character of the world's commerce in the present day bears no analogy whatever to the state of mercantile relations at the period when the Italians were supreme in commerce, manufactures, and shipping. Still Italy may be a great commercial nation. She may develop her varied and abounding resources. The sea is as open to the Italian seaman as to the British or the American, and in the immensely widened field of commerce, in every corner of the earth, there is ample room for the display of energy, skill, and enterprise.

Important lessons may be derived from the early exploits of the Italian traders. How many industries have they introduced throughout Europe! How many of those institutions which form the life-spring of commerce came in reality from the shores of the Mediterranean or the Lagunes of the Adriatic! Yet, when we pronounce the name of Italy, our associations at once run to her monuments and arts. We think of Genoa, with her palaces and churches, sumptuous in their rich display of marbles, statues, and paintings; of Florence, with her galleries, fountains, porches, and pavements; of Rome, with her obelisks, arches, temples, and pyramids; of Venice, with her bridges, palaces, and arsenals. How little do we realise that these are the monuments of their former prosperity; that they are the fruits of ancient Italian commerce and industry.

In immediate connection with the East, the Italians were the first to draw westward those articles which Egypt and Syria have always contributed to European taste and luxury, such as spices, silks, precious stones, and pearls of considerable value. These articles, by the most indirect and circuitous route, from the interior of India to Goa, from Goa to Aden, by caravans and river navigation, were introduced into Italy, and thence by the Italians, spread throughout Europe. Their ships brought

them as far as the Hanse towns, and their mercantile houses traded with them in the chief marts of merchandise, whence they drew wool and flax, and other raw materials, which they manufactured and sent to India and the East.

But what difficulties had the Italians to meet in the prosecution of such a trade! Look at the anarchy which prevailed throughout Europe; at the continuous hostilities and jealousies which existed among the different States and Republics, however near to each other. Think of the absence of roads, insecurity of inland communication, dangers of maritime commerce, want of credit, and want of capital; and think of the absence of all those elements which now give so much vitality and so much impulse to trade. Commerce was, indeed, adventurous. There was no marine insurance and no steam navigation in those days. The merchants were not backed by a formidable power ready to defend them against any exaction. Every inch of ground they gained, every adventure they realised, was, of itself, a triumph. That with such difficulties, and at so much peril, the Italian merchants should have been able to carry on so large a trade, is, indeed, wonderful; and we can only ascribe it to qualities personal to the people themselves, to an indomitable perseverance, and to well-directed energies.

Unfortunately, the Italian Republics partook far too much of the spirit of the times. Their enterprises were all begun and ended under the shield of brute force. Nor did they recognise any of those bonds of amity and common interest which should bind together sister communities. We have heard in recent times of keen competition and ill-repressed feelings of commercial rivalry, when each branch of trade sought to advance its own prosperity at the expense of all other branches, but what was such competition as compared with the hostilities between the Italian Republics? In their frantic eagerness for gain, and in their thirst of conquest and aggrandizement, they seemed to have forgotten all ties of a common nationality. And whilst they strove to injure each other, they procured their own destruction.

I will not enter into the political feuds of the Italian Republics, the cause, alas! of so much disunion, weakness, and suffering, for centuries and centuries. What we have to do is to observe the expansion of their commerce at a time when other nations in Europe were sunk in ignorance and barbarism. Amalfi is the most ancient of Italian republics. In the days of her prosperity she had a large population and a considerable shipping. She had direct relations with the Levant, and in the year 849 she even protected Rome from a threatened invasion. It was Flavio Gioja, of Amalfi, who brought into use the mariner's compass, and her laws of navigation, the "Tavola Amalfitana," were extensively adopted by the Mediterranean republics. But Amalfi excited the jealousy of Pisa, and she succumbed before a Pisan fleet. Pisa herself, however, after having taken a great part in the Crusades, and enjoying a considerable prosperity, became an early prey of Genoa. Florence succeeded Pisa; but she had not the advantage of a maritime position favourable to the foreign trade, and she gave herself to the development of her manufacturing industries. It was, in fact, the Florentine manufacture that constituted the chief bulk of Italian exports. Her silks and woollens were everywhere used. Banking operations were carried on at Florence with great success; and as early as the eleventh century the Florentines were the chief bankers of Europe, all public loans passing through their hands. In Italy alone there were more than eighty Florentine banking houses. Whilst the Peruzzi were lending money to the Knights of St. John of Jerusalem, the Bardi were farming the British customs. The noble families of Florence were all connected with commerce and industry. The Pazzi, Capponi, Buonaldomonte, Corsini, and Falconeri were bankers, manufacturers and exporters. And whence had the great Medici

amassed their princely fortunes but by successful operations in wool and other manufactures?

Genoa was for a considerable time the most formidable rival of Venice. The Genoese ships were the first to pass the straits of Gibraltar, and in 1316 they came as far as London. Though the Venetian marine was more numerous and better constructed, the Genoese had abler and bolder sailors. But Genoa was miserably governed; the constitution was always changing; party quarrels were frequent, and her commercial policy was intolerant and narrow-minded. Had Genoa had as good statesmen as she had merchants and sailors, she would not have refused the offer of Columbus, and she might have mastered events which speedily caused her prostration.

And what shall we say of Venice? Of that most renowned and most ancient republic? As early as the year 450, Venice was founded by the inhabitants of Aquilea, who sought a refuge on the sea and on the lagunes of the Adriatic from the ferocious hordes of Attila. Driven by necessity, like the Dutch, to derive their subsistence from navigation and commerce, the Venetians devoted themselves to fisheries and the production of salt, but the security with which they carried on their trade amidst the devastation of all inland states, soon attracted both colonists and capital from distant lands, and very speedily the island became rich and populous. The progress of Venice was indeed magical. Scarcely had she emerged from a position of isolation and indigence than she entered into active relations with the Levant, obtained many privileges in the East, and acquired considerable territorial possessions. She was universally acknowledged as the mistress of the sea. Her ships were not only the most numerous, but the best constructed, and best manned and commanded, and in their engagements with the Arabs and pirates were uniformly successful. Small indeed was the Venetian fleet as compared with the British at the present day. Although at the best time of the republic the Venetian ships numbered not less than 3,000, their tonnage was small, three-fourths of them being from 10 to 100 tons. Her dockyards, as depicted by Dante in the following verses, were as active as those of Liverpool and London:—

"As in the arsenal of Venice boils,  
Tenacious pitch in winter, to repair  
The bark disabled by long watery toils;  
For since to venture forth they are afraid,  
One here a vessel builds, another there  
Caulks that which many voyages hath made;  
One strikes the prow, one hammers at the poop,  
One mends a main and one a mizen sail;  
One shapes an oar, another twists a rope,  
Not by fire beneath, but art divine,  
Boiled up thick pitch throughout the gloomy vale."

Various manufactures settled in Venice. The silk manufacture was very important. The manufacture of arms, jewellery, wax, soap, perfumery, and glass, each acquired considerable reputation; and if any further proofs were wanting of her advance in the arts, industry, and commerce, we might find them in the extensive transactions carried on by the Bank of Venice. The operations of commerce must have been very extensive before the Venetians could have recognised the utility of such an establishment. Everything in Venice manifested activity and prosperity, and, as might be expected, luxury and pride grew apace.

Never was Venice more sure of her supremacy, and more confident in the progress of her trade, than towards the end of the fifteenth century. She never thought that the envy with which other nations regarded her growth would one day lead to discoveries fatal to the maintenance of her monopoly. The idea that the opening of a maritime route round Africa could take away their Indian commerce, never entered the minds of the Venetians, even when the route was actually discovered. What all the world saw, they could never believe, and when they began to feel the effect of the new revolution, instead of putting themselves in advance of other nations, they dog-

gedly pursued the old and exploded track. Their eyes were not open till all was lost, when the treasures of India flowed northward, and when the discovery of America transformed entirely the relations between the different parts of the world.

But we must have done with the past, and deal with the present. Think not that the old spirit of the Italian trader is extinct. It is living, and it will live. It lives in Italy, and it lives in the Italians wherever they reside. International law tells us that a Scotchman living or trading in England is an Englishman; but, however much he may love and admire England, he will be but a poor specimen of a Scotchman if he does not resent with indignation the calumny that he has ever broken the ties which bind him to his Highland home. And so with the Italians, be they in England, France, Greece, or Turkey. So hereditary, indeed, is this spirit of nationality—nay, even national instincts and national aptitude—that after the lapse of generations it still remains undecaying and unchanged. As an example, take Scio, one of the islands ages ago mortgaged to the House of Giustiniani, of Genoa, by one of the Emperors of the Greek Roman Empire. That island is still for all practical purposes Genoese. All the traditions are Genoese; all the houses are built in the Genoese fashion; and, if I am correctly informed, by far the largest number of Greek merchants—at least so-called—in this very London and Manchester, are only the descendants of the Giustiniani, of Scio. A most curious and interesting coincidence, corroborated, I believe, from the fact that the Scio Greeks are uniformly marked by the elongated form of their heads, the effect of an old Genoese custom of putting children's heads in frames. Little, perhaps, do our shrewd Greek merchants think that they are now the living representatives of the Italian traders of the middle ages.

What is the present state of industry and commerce in Italy? As from the snowy tops of the Cenis or the St. Gothard, we gallop towards Italy, what first arrest our eyes are those impetuous waterfalls which descending into the beautiful lakes below, by numerous canals and navigable rivers spread themselves over the fertile plains of Lombardy. Nowhere has the hand of man seconded so ably the gifts of nature. Where can we find a system of irrigation more perfect than that which enriches the Milanese territory? The works of Leonardo da Vinci, Raffaele, and Brabanti, are to this day the admiration of the world. Hence the advanced condition of agriculture in the great plains of Northern Italy. Whilst the land is in a manner forced to produce a constant succession of grass and grain, the vine and mulberry beautify the country, and give employment to the dense population. In Southern Italy the vine, the olive, and the mulberry, are the chief objects of culture; but the system of irrigation and drainage is not so perfect as in the north. Whilst some portions of land have but little water, other portions are often inundated with water, charged with an enormous quantity of vegetable matter carried from the mountains. As a whole, the agricultural riches of Italy are considerable, and her industry is well rewarded.

In mineral riches Italy is not so fortunate. The great want in Italy is fuel. Timber is dear, and the only substitute for coals is the deposits of anthracite, a mineral substance, consisting of carbon, with a minimum amount of hydrogen. Yet Tuscany abounds in copper, iron, mercury, lead, boracic acid, &c.\* Tuscany is to Italy what Cornwall is to England and Hungary to Austria. At best, however, the productions of the mines are indeed small. But let us pass to other industries.

The production of Silk, and the different industries attached to it, are of great importance. Northern Italy alone produces silk to the amount of £7,000,000 to £8,000,000, and of a quality far superior to the produc-

\* See papers by Mr. Jervis, in *Journal*, Vol. VIII., pp. 536, 567, 689, 699, 723, 743, 755.

tions of any other country. China and India are now sending to Europe immense quantities of silk, yet the Italian organzine and other filatures are as much required as ever. The Straw-work manufacture of Tuscany is of great value. Tuscany alone produces the raw material, and the value of straw hats exported is well nigh £1,000,000 per annum. The marbles of Carrara, the ornamental stones termed *Mischio di Saravezzo*, the alabaster and serpentine, are not only productions of immense value, but are the materials of industries strictly national. The manufacture of mosaics in Florence has a world-wide fame, and wherever we travel, and whether we inspect the palaces of sovereigns, or galleries of art, everywhere we find the productions of the Italian chisel, the glories of Italian art. But Italy is not only rich in works of art and articles of luxury; her fertile land and her rich pasture afford the most delicious and most nutritive articles of provisions. Much I might say of the Parmesan Cheese of Milan, Lodi, and Pavia, on the extensive production of excellent wine throughout Italy, as we well know, by the *Nasco* of Sardinia, the *Aleatico* of Tuscany, the *Vino Santo*, and *Lacryma Cristi* of Sicily; and also on the rice, grain, macaroni, and fruits which find a market throughout Europe. Nowhere, perhaps, can we find more varied productions and industries than in Italy. But they want growth and expansion. They only indicate what they might become under more favourable auspices. Our acquaintance with Italian produce and industry is very imperfect; even the recent Universal Exhibition failed to display in a proper manner what Italy can furnish to the world. In 1851, the number of exhibitors from Tuscany, the Roman States, and Sardinia, was about 200, but Lombardy and Venice were concealed under the huge heading of Austria, and the Two Sicilies were not represented. At the Universal Exhibition of Paris, in 1855, the number of exhibitors from the Roman States, Tuscany, and Sardinia, was nearly 500, but the same deficiencies were experienced as regards Lombardy, Venice, and Naples. We shall soon see what Italy will exhibit in 1862. Assuming that the work of regeneration, and the reform of abuses, now vigorously in progress, must occupy the attention of the Italians for some time to come, it will be from 1862 that the economical progress of Italy will date. Let us hope that an effort may then be made to exhibit in a thorough manner the various resources of that gifted land, and that thenceforth our trade with Italy may double or treble the present amount. Our imports thence probably amount now to £3,000,000, not including, however, the Italian silk which arrives here through France; and our exports to Sardinia, the Italian-Austrian States, Tuscany, the Papal States, and Two Sicilies, exceed £6,000,000.

The present amount of commerce in Italy is doubtless immensely inferior to that of the United Kingdom, France, or the United States, yet if we take all the States together, the imports of Italy will amount to about £30,000,000, and the exports to £26,000,000, a tonnage entered and cleared of nearly 4,000,000 tons, with a mercantile marine of 700,000 tons. In the last decennium the commerce of Sardinia has more than doubled, but that of other States has shown but little improvement. No better evidence can be produced of the superior position of the northern States than the fact that whilst Sardinia exports at the rate of 32s. per head, the exports of Tuscany average 25s., those of the Roman States 11s., and those of the Neapolitan States barely 8s. per head. As yet the exports of Italy consist principally of her own produce, and of articles prepared for manufacturing purposes. In cotton, woollen, and linen manufactures, the modern wonders of mechanical power, Italy cannot think of competing with Great Britain, though she produces considerable quantities of such articles for her own consumption. There are, however, no positive hindrances to her achieving, even in these, considerable distinction. No climate is better adapted than the Italian for vividness and brilliancy of colour. Dyewoods they may have in abundance. The water is good, and as for power

of inventiveness, we might well trust the land of Raffaello Correggio, and Carracci.

But what has become of the great Italian Republics? Their institutions are gone for ever. They are the shadow of the past. Yet some of them still preserve considerable importance. Genoa is the chief outlet for the Mediterranean of the manufactures of Switzerland, Lombardy, and Piedmont; and Lombardy receives most of the foreign articles imported through Genoa. She has a population of 120,000, an excellent harbour, a commerce of importation and exportation amounting to £15,000,000, and a mercantile marine amounting to 200,000 tons. She has large manufactures of silk, cotton, wool, hides and leather, and considerable foundries and establishments of mechanical engineering. There is life in Genoa, and she will be the first to benefit from the extension of the territories in Northern Italy. Leghorn is by no means unimportant. She has a population of 100,000, and an export and import trade of about £7,000,000 to £8,000,000. Naples, also in the Mediterranean, is a large seaport, the principal port, in fact, of the two Sicilies, with much trade and extensive manufacture. Civita Vecchia is of no great importance. In the Adriatic Ancona is essentially a mercantile city, with a large marine; but Venice, still prostrate under the galling yoke of Austria, has but little left of her former glory. When will she rise as a man to shake off the chains of her slavery? Do we not smart with indignation on beholding that fairest of all cities, that ancient mart of merchandise, that Queen of the Sea, made the victim of the most unheard-of oppression and tyranny? Would that at any price she could speedily be wrested from the claws of Austria. What is to be the price of her redemption? Let a sum be named. She will readily pay it. Italy will pay it, and exultingly she will cry "At a great price I have purchased this freedom." At Rome, too, the metropolis of the world, the city of the Cæsars, foreign bayonets are still parading the streets. What for? To prop up a faded government and a sovereign infinitely more sick and decrepid than the Sultan of Turkey. Oh, it is high time that an end should be put to such political crimes, that the inviolability of states and the rights of nations should be better respected. It is high time for the nations of Europe to exact from their rulers a more frank and explicit policy. Alas! alas! how often the most iniquitous acts are accomplished under the mask of the most insinuating intentions. But we have nearly forgotten our topic—the present condition of Italian trade. Yet how can we disconnect politics and commerce? The political subjection of Italy has been the main cause of her decadence.

For years, and I may say for centuries, has Italy been misgoverned and oppressed. Despotism have kept her under thralldom. Foreigners have trodden her under foot. Her best citizens and her wisest statesmen, guilty of no crime, but an ardent love for their own dear fatherland, have been torn from their homes, immured in dungeons, and left to waste their shattered lives roaming in foreign lands. Discontent and revolution, insecurity of life and property, were the necessary consequences, and with them industry was discouraged, commerce diminished, and capital and credit speedily disappeared.

The sub-division of Italy into so many little States, each bound by a customs-barrier, and each pursuing a different policy, so restricted internal commerce, and crippled the markets for home consumption, that no encouragement whatever was afforded to the extension of industrial establishments. Who would think of planting a factory of any extent in States so circumscribed? Hence inventors obtained no remuneration for their discoveries, and the best novelties found their way to other States of Europe.

Another great evil is the deficient state of communication. In the centre of Italy goods are still carried from town to town by horses, mules, and donkeys. Many lines of railway have been opened in the north, but more are wanted, to form a perfect link between Sicily and Turin,

and to afford a free and easy communication between the Adriatic and the Mediterranean. National shipping has hitherto had no encouragement. The science of navigation is well cultivated; and the timber for ship-building is excellent, but the petty governments had no sufficient influence with foreign powers to demand a due respect for their flags. Poor Venice has always been sacrificed to advance the interests of Trieste; and Ancona, ruled by ecclesiastical "Monsignors," has always been made the tool of Austrian intrigues.

We cannot complain much of the commercial policy of Italy. The principles of free trade were early advocated by Italian economists, and it was in Italy that the true maxims regarding money and wealth were first advanced, and though, owing to her limited trade, the Italians had no opportunities of developing and working out the principles they so ably investigated, the tariffs have always been, as a whole, rather favourable to the development of national resources. In thus briefly noticing the causes which have hindered the progress of Italian commerce, it is impossible to ignore the baneful influence exercised by the religious practices of the country. Those interminable feast-days and holidays, those constant processions and pilgrimages, in my opinion, rob the people of their most precious time, and engender in them habits of idleness not easily broken off. Think of the numerous legal and binding feast days; think of the saints' days which each district keeps sacred to its patron; think of the Carnival, that time of buffoonery, libertinage, and revelries; think of Lent, that season of physical exhaustion caused by fasting, and think of the poor Jews, who are doomed to keep all their own feasts and those of the Roman Catholics as well. There is no need of an Early Closing Association in circumstances such as these. But shall I not say a word of the Inquisition, that fearful tribunal, that scourge of nations? The time is happily gone by for exhibitions of *auto da fe* and burning piles, but are not the inquisitors of Rome, Ancona, and all places and states wherever they have the slightest freedom of action, ever ready to impose disabilities on Jews, Protestants, Greeks and any other sect? What is it that has raised England to her present pitch of prosperity but the freedom she has granted to strangers of all climes, and the respect she has paid to the creeds of all nations?

A glorious mission is now afforded to the illustrious sovereign who from the Alps to Sicily is saluted as King of Italy, and great indeed will be his moral triumph should he succeed in lifting up that nation to a position worthy of her ancient rank. It is a gigantic task, but it must be accomplished. Recent events have given the most irrefragable proof that Italy is more than a geographical de-

signation, that she is one kingdom, one in language, and one in political aspirations. To establish throughout the length and breadth of that land wise laws and institutions, is the first duty of the newly-elected sovereign, and bold measures are absolutely required for the purpose. Doubtless, grave difficulties will beset his path at every turn, and time must necessarily elapse before the different measures may bear ripened fruits. Let him not be discouraged. Reforms are wanted on every side:—religious, moral, social, economical, and political reforms.

A permanency of political institutions, perfect security for the investment of capital, freedom of locomotion, impartial and prompt administration of justice, a satisfactory state of finance, perfect tolerance of all religious opinions, and, above all, the most complete civil liberty, including the liberty of the press; these are objects of the highest importance to achieve, but though they are doubtless replete with difficulties, there is a power of public opinion, a *prestige* connected with the regeneration of a nation once so great and chivalrous that will render all these reforms a work of comparatively easy execution.

The world owes much to Italy. To her we owe those classical poets and historians, and those masters of oratory which have ever been, and will ever be, the models and standards of all seminaries. To Italy we owe a system of jurisprudence the influence of which is still felt in the law and procedure of all civilised States. To her we owe the first treatise on algebra and the first great work on anatomy. It is there that Galileo, that great luminary of physical and natural science, rose to dissipate the darkness that surrounded the world; and there it is that painting, sculpture, and poetry have reached the highest perfection.

Need I remind you of Columbus and Cabot, of Dante and Petrarch, of Raffaele and Michael Angelo, of Donizetti and Paganini, of Rubini and Grisi; and need I say a word to engage your sympathies in favour of Cavour and Garibaldi, those heroes of the mind, the heart, and the hand, who, under God, have disenthralled my own dear fatherland from the bonds of oppression and slavery?

A country which has given birth to so many masters of Science and Art—a country which possesses so many claims to the gratitude of the learned and the good—a country, in resources so rich, and in position so commanding—is well entitled to a high place in the Councils of Europe, and the civilised world will not be tardy in awarding to her the tribute which is due to the oldest and most successful explorer of European Commerce and Industry.

## APPENDIX

### ECONOMICAL CONDITION OF ITALY IN 1856.

	POPULATION.	IMPORTS.	EXPORTS.	REVENUE.	EXPENDITURE.	DEBT.	SHIPPING.
		£	£	£	£	£	Tons.
Sardinia (continent) ... ..	4,368,972	15,852,711	12,523,164	5,438,692	5,749,074	27,224,000	177,000
" (island) ... ..	547,112	587,815	460,070				
Tuscany ... ..	1,796,078	3,006,564	2,323,236	1,265,591	1,297,029	4,662,442	31,000
Roman States ... ..	3,124,668	3,253,734	1,676,386	3,039,321	3,135,436	2,500,000	30,000
Two Sicilies ... ..	9,117,005	3,210,819	1,468,709	5,000,000	5,000,000	2,000,000	220,000
Lombardy ... ..	3,009,505	2,156,392	6,205,753				
Venice ... ..	2,493,968	1,958,266	647,500	...	...	...	30,000
Tyrol ... ..	925,066?	700,000?	300,000?				
Modena ... ..	600,676	250,000	53,800	300,000	300,000	...	
Parma ... ..	508,784	190,000	150,000	370,000	370,000	...	
	26,491,834	30,166,301	25,808,618	...	...	36,386,442	488,000

## NAVIGATION OF ITALIAN PORTS.—TONNAGE OF SHIPPING ENTERED AND CLEARED.

	GENOA.	CAGLIARI.	VENICE.	LEGHORN.	ANCONA.	NAPLES.	CONTINENTAL PARTS OF TWO SICILIES.	PALERMO.	MESSINA.	TOTAL.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
British .....	136,895	27,366	52,257	114,724	57,072	99,250	87,373	114,690	100,115	789,742
Neapolitan and Sicilian.....	104,568	7,734	21,692	23,000	3,117	198,896	...	333,566	303,803	996,376
Sardinian.....	336,954	104,066	5,313	8,000	390	28,526	67,839	2,512	8,174	561,774
French .....	141,673	17,003	3,414	2,300	...	33,396	205,648	1,720	197,460	602,614
Austrian .....	16,833	3,976	146,352	11,000	101,384	1,462	128,813	5,044	8,087	422,951
Roman.....	6,343	1,657	3,198	4,000	48,497	...	46,209	662	252	110,818
Tuscan .....	98,056	2,426	1,092	160,000	...	4,938	17,391	...	...	283,903
United States of America ...	43,615	16,516	15,526	8,000	837	3,218	7,960	42,666	31,010	169,348
Swedish and Norwegian ...	42,694	25,248	...	10,026	246	2,928	4,475	3,068	6,935	96,620
Greek .....	4,648	9,150	31,651	7,800	517	1,830	2,942	...	7,888	66,426
Dutch .....	14,239	1,660	7,875	3,600	794	3,178	8,969	3,482	4,631	48,428
Spanish .....	15,297	6,082	...	1,500	...	1,372	3,048	...	...	27,299
Modenese .....	5,905	...	...	15,000	...	...	438	...	...	21,343
Danish .....	4,110	...	1,798	1,800	240	248	1,471	1,046	9,178	19,891
Turkish .....	...	482	3,101	400	...	...	7,018	...	...	11,001
Ionian Islands.....	...	2,382	...	...	...	52	7,994	...	...	10,428
Russian .....	...	...	...	1,000	...	...	5,941	1,000	2,269	10,210
Belgian .....	6,588	...	116	200	...	...	...	370	568	7,842
Oldenburgh .....	364	...	506	6,000	...	...	...	...	...	6,870
Prussian .....	957	2,562	750	100	...	...	1,924	...	506	6,799
Bremen .....	4,366	...	...	...	...	...	...	...	...	4,366
Hanoverian.....	1,264	...	770	80	...	...	...	758	1,619	4,491
Mecklenburgh .....	3,977	...	...	...	...	...	...	...	...	3,977
Hamburg and Hanseatic } Towns.....	1,882	...	208	350	...	260	...	...	...	2,700
Tunisian .....	236	28	...	...	...	...	2,299	...	...	2,563
Peruvian .....	2,344	...	...	...	...	...	...	...	...	2,344
Jerusalem .....	560	260	...	1,300	...	...	...	...	...	2,120
Portuguese .....	1,392	...	...	100	...	...	...	...	...	1,492
Uruguay .....	834	...	542	...	...	...	...	...	...	1,376
Moldavian .....	418	...	682	...	...	...	...	...	...	1,100
Argentine Republic .....	692	...	...	...	...	...	...	...	...	692
Chilian .....	854	...	...	...	...	...	...	...	...	854
Servian.....	...	...	254	...	...	...	...	...	...	254
Total .....	998,558	228,598	297,097	380,280	213,094	379,554	607,752	510,584	682,495	4,299,012

## ARTICLES OF ITALIAN EXPORT IN 1856.

Brandy.....	4,000,000 galls.	Works of modern art, sculpture, painting, &c.	500,000
Wine .....	8,000,000 "	Works of all kinds	4,500,000
Olive Oil.....	23,000,000 lbs.	Chestnuts .....	40,000 "
White Lead ...	1,200,000 "	Raw Copper ...	400,000 "
Bark of Pine (tanned) }	2,700,000 "	Borax .....	3,000,000 "
Fruit (green) }	28,000,000 "	Bark .....	10,000,000 "
Oranges and Lemons ...	1,200,000 boxes	Soap .....	300,000 "
Seed, Oleaginous ...	2,200,000 lbs.	Straw hats	500,000 "
Hides, wet and dry .....	2,300,000 "	" manu- factures of "	10,000 "
Cotton, raw ...	12,000,000 "	" plaited for hats ...	400,000 "
Wool .....	80,000,000 "	Almonds.....	1,000 cwt.
Silk, waste .....	1,000,000 "	Argols .....	12,000 "
" prepared for throwing }	15,000 "	Fruits—dry figs	21,000 "
" raw .....	8,000,000 "	Liquorice .....	10,000 "
" thrown ...	2,000,000 "	Nuts, &c. ....	8,000 "
" manufac- tured glacé }	90,000 "	Sulphur .....	8,000 "
" thread.....	250,000 "	Shumac .....	700,000 "
Rice .....	50,000,000 "	Cream of tartar	26,000 "
Maccaroni .....	4,000,000 "	Linseed .....	10,000 "
Paper .....	3,000,000 "	Brimstone .....	2,500,000 "
Hardware .....	100,000 "	Manna .....	2,500 "
Coral, wrought	45,000 "	Fish, salted.....	6,000 "
Machinery .....	22,000,000 "	Barilla.....	184,000 "
Lead Ore.....	15,000,000 "	Cheese.....	800,000,000 "
Hemp .....	25,000,000 "	Timber for building ...	...
Stone and materials for building ...	50,000,000 "	Grain .....	...
Cordage of hemp	1,500,000 "	Animals, &c. ...	...
Skins and furs	760,000 "		

## TRADE OF THE UNITED KINGDOM WITH ITALY IN 1858.

	IMPORTS FROM	EXPORTS TO
	£	£
Sardinia ... ..	148,937*	1,361,140
Italian-Austrian Territories.	669,558†	1,516,481†
Tuscany ... ..	538,500	1,086,670
Papal States... ..	96,656	420,666
Two Sicilies... ..	1,656,523	1,787,300
	3,110,174	6,172,257

\* Considerable quantities of silks are imported from the Sardinian territories, Lombardy and Venice, through France.

† The trade with the Austrian territories include the trade with Austria proper, through Trieste, but the larger portion was for Venice and Lombardy.

## DISCUSSION.

MR. WINKWORTH said the learned Professor's paper contained information which would be valuable at any time, but which was peculiarly so at the present moment, when, as Mr. Levi most emphatically said, a new era was bursting on the history of that interesting country, of whose natural and industrial resources he had so ably treated. Hitherto its producing capabilities had been "cribbed, cabined, and confined." Commercial freedom,

the cultivation of mechanical science, and the healthy growth of manufacturing skill, were not consistent with a state of political slavery. These could only flourish where property and person were secure, which had not been the case since the Middle Ages. Of this the International Exhibitions of 1851 and 1855 afforded melancholy evidence. Raw materials, such as silk and others mentioned in the paper, were shown indeed in sufficient abundance, but of manufactured goods the samples were "few and far between." And from one extensive district, the Neapolitan, no specimens graced the walls or the counters of 1851, and they were but scantily supplied in 1855. The late King of the Two Sicilies absolutely ignored the Exhibition of 1851, and would not allow his subjects to send to it any of their native productions. And yet what ample scope was there in all Italy, and especially in Naples, for the exercise of manufacturing talent, and what a charity it would be to employ the idle population of that devoted city—the ignorant, bigoted, famished, and therefore dangerous lazzaroni, in the development of those rich native resources to which the Professor had drawn attention. Might he not now pretty confidently indulge the hope that, in addition to political liberty and personal security, the example of France in the direction of commercial freedom, would inaugurate a millennium of social, moral, and material prosperity in Italy, and contribute to remove the fetters which had been so long riveted on the minds and bodies of Italians? Already a Treaty of Commerce was said to be in progress of negotiation between France and Belgium, and it was thought probable that the commercial policy of the Zollverein would be still further liberalised. Taking all these facts into consideration, therefore, he could not but confidently anticipate that, ere many years had elapsed, all civilised nations would have returned, as far as their artificial financial conditions would permit, to the normal and wise provisions of Providence for the mutual interchange of their superfluous productions, without the ruinous exactions of oppressive duties. Towards this "consummation so devoutly to be wished," this country had had the honour of taking the initiative. In 1824, when all prohibitory duties were abolished; in 1841, when the corn laws were repealed; in 1846, when a large mass of commodities were allowed to come in free, and all protective duties were abrogated; and finally, during the present year, when, under the powerful auspices and enlightened views of the present Chancellor of the Exchequer, who was, unfortunately, prevented from occupying the chair that evening, the last rag—no, not quite, for "rags" still remained to be dealt with, but the last vestige of fiscal obstruction, had been scattered to the winds.

Mr. E. W. TRENT remarked that there was one article of commerce which had been lightly touched upon, but in which he was personally interested—namely, Italian hemp. He might say it was the finest, strongest, and most durable hemp in the world. Such was the difficulty of manufacturing it, when it was first introduced into this country some 25 years ago, that the workmen employed upon it, and paid by the piece, could not earn remunerative wages; but at length the value of the material was clearly manifested, and it had been extensively used ever since. Some years ago he introduced cordage made of this material to the Barking fisheries; but as it was of a very white colour, they thought it was East Indian Sunn fibre, and objected to use it. He had it tanned, however, and it was then extensively used, and its value was fully recognised even to the giving a much higher price than was paid for Russian hemp. Such was the demand for it that, if his firm had continued the manufacture, they might have employed a 40-horse power engine upon that work alone. During the Crimean war our Government was searching in all directions for hempen materials, and at that time his firm manufactured some rope from flax grown in Ireland, by Mr. Roach, now Lord Fermoy, who took great pains with its cultivation and pre-

paration, obtaining one ton of flax from four tons of straw, the ordinary quantity being six or seven tons of straw to one ton of fibre. Mr. Trent then proceeded to read an analysis of the relative strength of cordage made from various descriptions of hemp. The testing at Chatham dockyard in January, 1855, gave the strength of nearly one-fourth in favour of Italian over Russian hemp. In calling attention to the various specimens of fibres upon the table, Mr. Trent remarked that the sample of New Zealand flax was of the description for the more perfect cleansing of which the Colonial Government had offered premiums to the amount of £4,000. With regard to the Italian hemp, he believed if it were introduced into India it would flourish well, and with machinery which he would suggest for dressing it, he had no doubt it might be most beneficially and profitably cultivated in that country, and would prove as advantageous to India as the introduction of an improved breed of sheep had been to Australia. They were quite aware of the fact, so remarkably evidenced by the able paper of Dr. Forbes Watson, read before the Society last Session, that India was a fibre-growing country, but in his opinion the indigenous fibres of India were no more to be compared with Italian hemp than the crab-apple could be compared with the best cultivated fruit. The Bombay hemp was worth from £18 to £20 a ton, but the principal duty of the inspector of cordage of the late East Indian Company was to see that no East Indian fibre was introduced into it. He had made the inquiry why the Italian hemp was not used, but he was told that the system had been so long established, that any changes would meet with opposition in many quarters.

Mr. HILTON begged permission to ask one or two questions upon this paper. He would inquire in the first place, whether the information he had received was correct—that the Tuscan government had assimilated their coinage and currency to that of Sardinia. If that were so he thought it was a step in the right direction, tending to get rid of some of the difficulties which had stood in the way of international communication. In the next place he would inquire whether Mr. Leone Levi could inform them the reason of the present short supply of sulphur from Sicily. Just now it was a very scarce article, and he should be glad to hear whether this arose from political causes or from labour in that country having been directed from its ordinary channels. The usual price of good rough brimstone, called in the trade "good seconds," was £4 10s. per ton; it was now worth £10 5s. per ton. This was the material from which sulphuric acid was made, a chemical very largely used in our manufactures, and the price of that article had been enhanced in consequence of the increased cost of the sulphur. He believed Scotland was the largest consumer of the sulphur of Sicily, whilst England supplied almost all Europe with rough chemicals; and he thought some advantages would be derived from the recent treaty with France, with respect to the chemicals going into that country. The article of Italian produce in which he was principally interested, was olive oil, which had, of late, risen very considerably in value. That was also owing, he believed, to labour being diverted from its usual channels. In fact, there was a considerable rise in the prices of many of the staple commodities of Italian production; and if these could be reduced he was confident the Italian trade would be very greatly augmented.

Mr. P. L. SIMMONDS said, he had listened with much interest to the very instructive paper of Professor Levi, in which he had spoken with such eloquence on the past, and such hopefulness on the future of Italy. The subject of the commerce and industries of that country was brought before the Society most opportunely at this time of transition, when, after a stormy period of political disturbance, Italy, it was to be hoped, would subside into a combined State, destined to make moral and material progress, and to take prominent rank by its commerce and agriculture among other European nations. To accomplish this, however, much yet remained to be done, and



the incubus of a serious debt and a large standing army would press heavily for some time upon its resources, and it would also take time to return to the peaceful pursuits of industry after the excitement of war. That there were the elements of prosperity existent in the country Professor Levi had pointed out, in fertile soil, favourable climates, and convenient shipping ports. But the list of products enumerated by Professor Levi, and the rather small number of samples placed on the tables, conveyed but an imperfect indication of the raw and manufactured products obtainable in that country. However warm our sympathies with Italian freedom and liberty might be, they would in time cool down, and we should come to the more selfish and business view of the subject, resolving itself into—"what does Italy produce that is useful to us, and what will she take of us in return?" Prominent mention had been made by two previous speakers of three important Italian products, viz., hemp, sulphur, and olive oil. With respect to the fine quality of hemp, it was to be regretted that our supplies of this valuable fibre should have dropped from 35,000 cwt. or 40,000 cwt. to none at all. As for introducing it into this country, great as the demand for flax and hemp was, the acreage here under culture was receding rather than expanding, it being considered an exhausting crop, and there being difficulties thrown in the way of its culture by landowners; while it was also found that the land was more valuable here for pasture, or for wool or cereal crops. If it was meant to acclimatize it in India, attention had, he believed, already been given to its introduction into the Punjaub. Olive oil ought certainly to be produced more largely in the Italian States, the land of the olive, for at present the limit of supply was two thousand to three thousand tons. Perhaps, however, some of the other animal and vegetable oils, of which such large quantities were now imported, might have interfered with its application and consumption. As regarded brimstone or sulphur, we now received about one million or one million and a half cwt. from the Two Sicilies, and about 10,000 cwt. from the Papal States. The importance of a due supply of this valuable substance for various chemical manufactures was known to every one. The demand for sulphuric acid was enormous, and continually increasing. On boracic acid, which was imported to the value of £80,000 or £100,000, the Society had recently had some valuable information laid before it. So also as respected marbles, the bulk of our supplies, to the value of about £65,000 a year, came from Italy. Argol and cream of tartar, the concretion of the wine casks, came in to the extent of 15,000 cwt. Essential oils and essences were other products for which the climate of Italy was peculiarly favourable, and which were always in demand. At present the value of those obtained from Italy was £40,000 or £50,000. Then there was a large quantity of liquorice juice and paste, 32,000 cwt. a principal use of which was said to be to flavour London porter. Even the macaroni and vermicelli, of which samples were on the table, were not unimportant products, our imports making 5,000 or 6,000 cwt. a year, worth about £12,500, although this had been much interfered with by the cheaper and inferior French and German imitations, made chiefly of potato starch. Of madder, we at present received about £107,000 worth from Italy. This was a most important dye stuff to the calico printers of Manchester and Glasgow, and for it we paid to France about one million sterling a year. Sunnachi was another important dye and tanning substance from Italy, the value of the imports of it from thence being £121,000. Rags were another raw material which was in great request by our paper-makers, particularly as the linen rags were fitted for the superior class of papers. A few years ago we obtained about 2,000 tons a year from Sardinia, but now only 500 tons, and as much from the Roman States, for the Americans and others competed with us in this market. Tallow and wool could also be obtained in small quantities. But there were two great industries in which we were specially interested, the exact condition of

which in Italy was desirable to be known. These were silk and cotton. Having recently been preparing new editions of two well-known works, "Ure's Cotton Manufactures," and "Ure's Philosophy of Manufactures," he had had to make himself acquainted with the present condition of the great textile industries on the Continent, and he might be permitted to read an extract from the proof sheets, which related to the Italian States:—

"Sardinia is a large producer of silk, and the crop a year or two ago was estimated at 57,000,000 lbs. of cocoons. The greater proportion of the silk is exported in a raw state. In 1856, there was imported into the kingdom of Sardinia 795,310 kilos. (of 2½ lbs. each) of raw, waste, and thrown silk, and 49,437 kilos of plain manufactured silk. The value of the direct exports of silk to Great Britain have lately ranged in value from 1,500,000 to 2,000,000 francs.

Turin, Nice, Coni, Alessandria, and other towns produce silk, both raw and organzine, in abundance. The culture of silk indeed forms the staple of industry of those places. The habits and wants of the insect are so well known, that with care it may be successfully raised in these northern provinces. The silks raised in Piedmont are very fine. They are bright and lustrous, and the twist is strong. The number of extensive producers is considerable, amongst whom may be specially named Messrs. Pelissini and Mancardi, of Turin; Mosca, Brothers, of Chiavazza; Dinigri, of Novi; Novelli and Bonelli, of Savillani; all of them owners of large establishments for reeling and for rearing the worms. Everything shows that the silk business is carried on to great perfection in the Sardinian states."

The trade in silk, in 1858, in the Sardinian States, was as follows, in kilogrammes of 2½ lb. :—

	Imports.	Exports.
Raw Silk .....	700,679	381,694
Thrown Silk .....	371,597	915,896
Tissue of Silk .....	105,902	32,891

The value of silk and articles manufactured from it, exported from Tuscany, amounted to about £5,500,000 annually. The Piedmontese organzines, taken in the aggregate, were, probably, now superior to any in existence; although those made by a few French firms realised higher prices. But it remained to be seen whether they would be able to keep pace with the numerous contrivances by which French and English engineers were constantly diminishing the cost and improving the quality of this delicate fabric. The large increase in the exports of thrown silk, might, to some extent, be due to a simultaneous increase in the home growth of the raw material; but there could be no question that the production of organzines had far outstripped the growth of native silk. In fact, many of the mills in Piedmont were working up for re-exportation Chinese and Bengal silk, purchased in London. There was no means of ascertaining the present quantity of silk stuff manufactured in Piedmont. In 1844 there were 4,600 looms, and 10,500 operatives, and the silk consumed was 290,000 lbs. Little or no progress had been made since that period, as the manufacturers complained that it was in vain for them to struggle against the French figured silks in foreign markets. The mere cost of the pattern became a heavy item, when distributed over the very limited number of pieces they disposed; whereas the French manufacturers had so large a home market, that the cost of their patterns was comparatively light. Passing on to cotton, he might now state that Sardinia imported on an average four or five million pounds of cotton from England and France, and about the same quantity from the United States; but in 1855 her direct importation from North America reached nearly 15,000,000 lbs. There seemed no sufficient reason why American vessels should not convey the whole quantity required by Sardinia directly to Genoa, and English or French vessels might carry thither a portion of American cargoes landed at Liverpool or Havre. A similar remark was applicable to the other ports of Italy, and those of Austria on the Adriatic; and the enterprise of establishing lines of ocean steamers between ports of the United

States and those of the Mediterranean would, if successful, tend greatly to encourage, if not secure, such direct importation. There were three cotton yarn manufactories in the Venetian provinces in 1856; one at Torre, one at Verona, and one at Pordenone, and 33 in Lombardy. A manufactory of cotton goods, containing 250 looms, was attached in the early part of 1857 to the spinning establishment at Pordenone, the productions of which tended to lessen the consumption of British goods. In Lombardy, 18,000 looms were employed in the manufacture of cotton, of which 16,000 were in the province of Milan. The spinneries and manufactories were increasing in importance. The official value of the imports of British cotton manufactures into Sardinia, which in 1852 were above one million sterling, had declined more than a fifth in the last five years, owing to the progress of native manufactures. The cotton industry had more than quadrupled since the year 1844. All the recent improvements of machinery adopted in England and elsewhere were to be found in the Piedmontese factories. They not only spun sufficient yarn for the home market, but were exporting considerable quantities to the Duchies. At the end of 1856 there were in Sardinia 35 cotton factories, with 228,000 spindles. Calculating the mean product of these in No. 16 yarn at 7 packets of 10 lb. each per spindle, the aggregate product would be about 18,000,000 lb. of yarn, one-half of which would be made into common fabrics on the spot, and the remainder sold to the trade. Even within the last year or two many of the mills had been enlarged, and English or French machinery of the most improved kind introduced in the place of the old Swiss machinery.

Mr. HILTON begged to add, with reference to the substitution of other descriptions of oils for olive oil, that he had never known a time when the latter was more in demand than it was at present, and the supply was a matter deserving of the closest attention. In 1850 or 1851 he imported olive oil from Messina and Gallipoli at £49 per tun; he had recently imported it at £61 per tun. In the same year he bought the finest Florence oil at £52 per tun, and had recently paid £70 per tun for the same description of oil delivered on board at Leghorn. The difference in price was greater than had ever before occurred within the recollection of the oldest member of the trade.

Mr. J. SUNK had been much interested in listening to Mr. Leone Levi's able paper. Allusion had been made to the present race of Greek merchants, as being descended from the former inhabitants of Scio; and he was reminded of the ordinary proverb amongst those who had transactions with the Greeks—that "if it takes five Englishmen to make a Jew, it takes nine Jews to make a Greek;" for in their transactions with Greeks they required to be so much upon their guard that unless they showed more than ordinary acuteness, they were likely to be losers. It struck him that one of the great reasons why Italy had not hitherto prospered commercially to a greater extent than she had done, was in a large degree the jealousy which subsisted between the various states of that country. To give an illustration of this, it was almost as if the various large counties of England—Yorkshire, Lancashire and Middlesex, instead of working together as one harmonious whole, were all mutually opposed to each other. With regard to the increased price of sulphur, he believed two principal causes might be assigned. One was that America largely imported that article, and another was that since the general failure of the grape crop, sulphur had been used in the vineyards all over Italy, and consequently they had a less quantity of that article to export. There was one product in which he was more particularly interested—that was silk. Although their importations of silk from Italy had been very large, yet they could now with the greatest ease do with ten times the quantity. Some years since, the silk crop failed, and it had never recovered. At the present time it was only two-thirds of what it was fourteen or fifteen years ago. England was now the great emporium of silk. The

supplies from China and India had increased in an astonishing ratio, and the demand in this country had so much advanced that but for those supplies the silk trade would be almost in a state of stagnation. He hoped, under the state of things which had recently been established, they would have larger supplies of Italian silk, for they could take for the richer silks, satins, and velvets, ten times the quantity they were now receiving, and it would be mutually advantageous to both countries to do so.

Mr. SAMUEL BROWN, having recently returned from a hasty tour in Naples and Sicily, would mention what appeared to him to be the opinion of the people themselves as to the best means of increasing the commerce of the country. The great cry was the want of communication. The need of railways had been felt for many years. The inhabitants of Sicily were dissatisfied with the late Government for not increasing trade by those means which had promoted it so rapidly and effectually in this and in other countries of Europe; and he believed the first step to be taken by the new Government was to encourage the construction of railways and the establishment of ready modes of communication between the large towns. The island of Sicily had not a single railway; and, in the kingdom of Naples there were only two lines, of 20 or 25 miles each, throughout the whole of the country. This had created so great dissatisfaction, that, if the present government took up the question, it would be the most important advantage for the interests of trade, and the development of the country, that could be desired.

Mr. WENTWORTH L. SCOTT would be glad to be informed whether such adulteration of olive oil as he believed had been detected usually took place in the country from which it was imported or whether the probability was that it was done in England. He had seen various samples of the finer wines, which were declared not to have been opened since they left their native shores, but which had not proved to be genuine.

Mr. J. P. GASSIOT, V.P.R.S., said it was impossible to have listened to this paper without feelings of deep sympathy and interest. The most cursory readers of history must recollect that Italy had held the highest rank as a commercial nation at a time when this country was in a state of semi-barbarism. What had been the cause of her decadence in the scale of nations? They could not but reflect that this was in a great measure owing to the obstructions to commerce which had been so forcibly alluded to that evening. They could not but wish every success to Italy; but, at the same time, they must all feel that she had to undergo a severe ordeal. Only within the last three or four weeks a gentleman well acquainted with that country had said to him, "What we want is a strong government, one which will protect property and which will secure the development of the great resources which Italy has within herself." They might now venture to hope for that; and he thought it was reasonable to anticipate that the enlightened policy of Cavour, backed by such a man as Garibaldi, would tend to the regeneration of Italy. But still there were those local jealousies which had been alluded to, to be smoothed down and got rid of; and they might hope to see that done. He was himself interested as a merchant in wines, and thought they might look to Italy for an increased supply at a future date. Allusion had been made to the diminished supply of sulphur, and the enhanced price of that commodity in this country. It was to be borne in mind that every wine-growing country had drawn upon the resources of the two Sicilies for that commodity, and therefore they must expect an increase in the price. The rise might, however, be temporary, because the trade of Sicily was not developed. He felt obliged to the Society of Arts and to Professor Levi personally, for bringing this subject so prominently before them.

The CHAIRMAN, in closing the discussion, said—to an educated man the condition of Italy must always be a subject of deep interest—remembering her early and

long-continued civilisation, that during that period her history had been mingled with some of the most remarkable events in the history of the world, it was impossible they could have other than a feeling of deep interest in the future of Italy. The marvellous romance of the present year was in itself calculated to enlist their deepest sympathies in the condition of that country. Her people had ever stood foremost in the cultivation of every Art and Science. To her modern Europe owed much of its jurisprudence—to her they owed the most brilliant examples of Literature, Art, and Architecture; and to her, probably, many of the most valuable lessons in Agriculture were due. In fact, whatever she had set her hand to, she had adorned. He would echo—if it were of any use to do so—the sanguine expectations of the future of Italy which they had heard that evening, but it was impossible to shut their eyes to the fact that much of her commercial greatness during the brilliant period which had been alluded to was due to her geographical position between the East and the West. She became what Tyre and Alexandria were in ancient days—a principal link in the communication between India and Europe, and this seemed at all times to have been a source of great wealth. To that circumstance Amalfi first and Pisa afterwards owed distinction, and then Genoa followed in their wake, and became distinguished for commerce and wealth. Whatever might be the future of that country, however, it was difficult to conceive that she could ever again become, as she was before, the great link to connect the eastern with the western world. Italy produced, in remarkable excellence, raw silk, and also agricultural produce of great value; she had fine fruits; she had a population which in other times was characterised by industry and by other elements that conducted to wealth, and there was no reason why that population should not give to Italy the advantages she ought to possess, though it was clear that there would always be a great dissimilarity between the future condition Italy might attain and the circumstances of her past history. One or two speakers had alluded to the jealousies of the Italian States as explaining the modern decadence of that country. Now it was to be recollected that during the most brilliant periods of her history, the same jealousies, the same rivalry, the same deadly hostility prevailed. Therefore, he did not think that was the true explanation of the condition they deplored, and which they would be glad to see changed. He felt it was not well to moderate the aspirations of an ardent and brilliant people, but it was well to place the various conflicting elements before them, for it was only by the consideration of those conflicting elements that they could arrive at a true estimate of the future of Italy. It was impossible to regard that country without being struck with the extent to which it had contributed to our present high state of civilisation. Take the mariner's compass, for example. Let them for one instant ponder upon the extent to which that discovery had contributed to the position of modern commerce. Let them look at the fact of the three great men—Columbus, Americus Vesputius, and Sebastian Cabot, the discoverers of the new world, having been all of Italian origin. They might not all endorse the expressions with regard to Italian politics and religion, to which the learned professor had given utterance, because upon those subjects there would always be difference of opinion, but he was quite sure they would sympathise with the ardent aspirations which he had expressed for the future of his native country. Sir Thomas Phillips concluded by moving a vote of thanks to Professor Levi, for his paper.

The vote of thanks was then passed.

PROFESSOR LEVI said he was obliged to the meeting for the kind attention they had paid to his paper. In reply to some of the questions, which yet remained unanswered, he would state that as to the assimilation of the coinage, he believed one of the first measures taken in Tuscany, and concurrently extended to other parts as the annexation proceeded, was the adoption of a uniform

system of weights, measures, and coins. The inquiries with regard to sulphur had been sufficiently answered. Then, with respect to adulteration, he might mention that the gentlemen who had favoured him with many of the samples exhibited (Messrs. Fortnum and Mason), had directed his attention to specimens of real Naples macaroni; but they had stated that, for one box of that article, they would see a hundred boxes of French macaroni. Both looked alike; but when they were boiled, the French macaroni broke in pieces, whilst the Neapolitan article remained entire. The same remark would, no doubt, apply to other articles. As regarded hemp, there could be no question that the Italian was the finest in the world, and the same might be said of silk. There were samples of Italian organzine which produced 40s. per lb.; whilst the great mass of India and China silk which came into this country might be purchased at from 15s. to 20s. per lb. This showed that the best qualities were produced in Italy.

The paper was illustrated by a collection of Italian wines and liqueurs, oil, and articles of food, contributed by Messrs. Fortnum and Mason; specimens of beads by Mr. Levin, of Bevis Marks; a series of the food-grains of Italy, by Messrs. Pietroni and Draper; specimens of Italian Silk, by Messrs. Durant and Co.; samples of Italian and other Hemp, by Mr. E. W. Trent; and other products; to all these gentlemen the thanks of the Society are due.

The Secretary announced that on Wednesday evening next, the 19th inst., a paper, by Mr. A. J. Tansley, "On the Straw-plait Trade," would be read. On this evening, Mr. John Dillon, Vice-President of the Society, will preside.

#### HERTFORD LOCAL BOARD.—DISTRIBUTION OF PRIZES.

On Tuesday evening, November 13th, a public meeting was held at the Town Hall, for the purpose of presenting to the Hertford candidates at the last examinations of the Society of Arts, the certificates which had been awarded them. The meeting was also convened for the purpose of bringing the object of these examinations prominently under the notice of the public, with a view to encourage more extensive local competition.

The Earl Cowper presided, supported by the Right Hon. W. F. Cowper, M.P., the Rev. J. W. Blakesley, Mr. Harry Chester, Sir Minto Farquhar, Bart., M.P., and Mr. G. J. Bosanquet. Amongst the audience, which also included many ladies, were the Mayor (Mr. Gripper), the ex-Mayor (Mr. H. Gilbertson), the Hon. and Rev. Godolphin Hastings, &c. The room was crowded to excess. On Earl Cowper taking the chair,

The Secretary to the Local Board (Mr. Marchant, jun.) read the report, which states that the Local Board have at the end of this, their first year, but little to report, beyond the fact that as far as their operations have extended they have been successful, and have led to the hope that, when the system of examinations becomes better known, young persons will very generally avail themselves of the advantages held out to them by the Society of Arts.

EARL COWPER said:—The numerous attendance upon this occasion showed how deep an interest the town of Hertford took in that great question of education which had brought them together; and, indeed, there was no subject which could be more interesting to those who were anxious for the welfare and prosperity of the country. By education he did not mean the mere accumulation of knowledge—the cramming into a

man of as much information as he could hold, but he meant that kind of training which made the mind powerful and able, as the body nourished by proper food and developed by healthful exercise was made vigorous and strong. If education were considered as a means by which the mind was strengthened, and men made accurate and profound thinkers, they must admit that there was nothing which tended more to make the nation prosperous. No amount of money earned by the commerce or generated by the labour of the country—no triumphs of our arms abroad, however we exulted in them, as we did this day in the news of recent successes in China,—nothing indeed that could add to the power and increase the resources of a country, was of so much importance to it as that its inhabitants should think rightly and well. The object of the Society of Arts appeared to be to aid in the instruction of the poorer members of the middle class, and of the working classes of the country. Other classes were allowed to enter the lists, and to become candidates for the certificates which the Society granted, but it was to assist in the education of these two classes that the Society principally directed its efforts. It was most essential at this time that the working people should be taught to think rightly, and to form sound and well weighed opinions upon public matters, for, as a class, they were daily increasing in importance and making their importance felt,—able to dictate, or, at all events, to have a voice in the choice of what their labour should be, and how it should be conducted. And though the subject of political reform—so lately before Parliament and the country—was never mentioned now, they could not help feeling that the time was coming when the middle classes who, in 1832, gained that great victory which gave them so large a measure of political power, would have to share that power with those below them. It was, therefore, of the utmost importance that those who came to share with them political privileges and power should be in a condition to do so with advantage to themselves and the country; and this could not be unless their stock of knowledge was increased, and their mental powers invigorated and developed. The working classes must train and educate themselves. Too much patronage would be likely rather to do harm; for it was in their experience that the mechanics' institutions which succeeded best were generally those which had been taken up by working men themselves; while those established by others for the benefit of the working class ended in not being attended, or in falling into the hands of persons of a superior class, for whom they were not originally designed. Then came the question of testing the knowledge obtained by the working man, to ascertain if it was of any worth, and also as a means of affording a stimulus to further acquisition. This purpose was fulfilled by the examinations of the Society of Arts. He would not lay any stress on the advantage these examinations offered to employers by giving them a ready means of judging whom they should employ, though in this respect they were useful, since a certificate of the Society of Arts was, in itself, a guarantee that its possessor was, to a certain extent, an educated man; but he was speaking of the advantages to the men themselves. There were some men who had such a thirst for knowledge that they studied for the sake of study, and found their pleasure and their reward in the pursuit itself. But he did not think this was a common thing in this country. In England we found more frequently that men so associated their aim with their labour, that whatever they did they did with an object. It was to give an object to these people, and thus induce them to acquire some portion of learning, that these examinations were useful. When certificates were obtained, no doubt object after object would rise up before their possessors. They would look upon them not as upon the prize for which they were struggling, but as a qualification to contend for the prize. Whatever the prize which those to whom he had now the pleasure of presenting the certificates of the Society of Arts set before themselves—and no doubt they had some greater object in

view than that they had now obtained—he congratulated them on their success. His lordship then presented the certificates to the successful candidates, with these words:—I have great pleasure in presenting to you these certificates. Whatever may be your future course in life, the information you have acquired, and the reputation you have gained, will be of advantage to you; and I shall always feel happy in remembering that I had here an opportunity of meeting you, and of presenting to you these documents which certify your intelligence, industry, and success.

Mr. HARRY CHESTER, on rising to move the first resolution, said that though not a stranger in Hertford, he felt he must be almost so to those whom he was addressing, and that, therefore, it was necessary he should tell them that he was there at the request of the Local Board, in order that he might explain to them as clearly and briefly as possible the general objects of the Society of Arts in its examinations, and the constitution of its Local Boards. He dared say that many of them had been present at schools of different kinds where prizes were given away broadcast; and it might have passed through their minds whether those prizes were given by persons absolutely impartial, and were a fair test of the attainments of those who received them. When the University of Oxford commenced its middle-class examinations, a large number of those who presented themselves for examination were plucked; and, he dared say, if inquiry could be made, it would be found that those plucked persons had previously carried home prizes from the schools where they had been taught. There was, however, no shadow of a doubt as to the value of the certificate given to those candidates who had come before that meeting; for it was given by a body of competent examiners in London, who were wholly ignorant of their persons and their names, and knew nothing of them except by their work, which was identified as theirs by a number on their examination papers. They might, therefore, be perfectly certain that if those young men were put to any test, however severe, it would only prove that the distinction they had obtained was honourably earned, and that they had a good and competent knowledge of the subjects on which they had been examined. What they had now to consider was what was the best means of promoting the education of the people; and it must strike every one that the best thing they could do was to apply the same principle in dealing with every class. Now, what was wanting in the system of education provided for the great mass of the industrial classes, was that principle which had long been applied to the higher classes—the principle of examination. It could hardly be conceived how much the education of the higher classes owed to the fact that the Universities had, during the whole time of their existence, been holding out before the great public schools of the country, a standard of reading and a test for the results of reading. It occurred to the Society of Arts that it might do something to supply this want in the education of the industrial classes; and the first thing it did was to establish a union with the various literary and mechanics' institutions throughout the kingdom; and, when this union had been carried on for two years, they took a step further, and proposed to establish a system of examinations. Mr. Chester then gave an account of the establishment and progress of the Society's system of examinations, explained the principles on which they were conducted, and pointed out the desirability of establishing a local Union of Institutions in that locality, as had been successfully done in Lancashire and elsewhere. He concluded by proposing:—

"That the scheme of examinations carried out by the Society of Arts in conjunction with the Local Boards deserves the attention of the Educational Institutions in this neighbourhood."

Sir MINTO FARQUHAR, M.P., seconded the resolution. After speaking generally of the advantages of education, he pointed out the important influence exercised upon schools by periodical inspection or examination. It was the same in other matters, of which he would give an

illustration from what he had seen that day. He had seen that splendid corps of volunteers—the 1st Herts, under the command of their noble Chairman, inspected by Colonel Ibbetson. Who could doubt that that corps had been stimulated to exert themselves in their drill by a strong desire to distinguish themselves before the Inspector? And what had been the result? The Inspector had said he never saw a volunteer corps go through their duty in a more admirable manner. It was just so with regard to mental application. School inspectors stimulated the teachers and the scholars; and the examinations instituted by the Society of Arts were invaluable, because they stimulated the youths of the country to perseverance in a course of self-education.

The Right Hon. W. COWPER, M.P., said his hon. friend and colleague had reminded them that that morning they had a review of the Rifle Volunteers, and that a great tribute of admiration was given by Colonel Ibbetson, who inspected them. He could not but think it significant that in the evening of the same day there should be another parade of a different sort—of volunteers in an intellectual campaign, still under the presidency of the same noble lord who had drawn his sword in the morning, and with great energy given the word of command, and in the evening, without a sword, had, with an eloquent tongue, led them through the requisite evolutions, and that they should also have received high commendation from their inspecting-officer, Mr. Harry Chester, who, after spending his life in the official conduct of State Education, had of late years devoted himself to be a sort of inspector-general of mechanics' institutions and other literary societies in connection with the Society of Arts, and had rendered most useful service to the country. This town was thankful to him for the steps he had taken in forming the Local Board, and in stimulating the cause of education here. It was satisfactory at this, the first meeting after the formation of the Board, to find that they had so far succeeded that, although only two candidates went from this Board to the Central Examination, both were successful. They had both obtained first-class certificates, and one of them had, to a great extent, gained the knowledge for which he had obtained that honourable distinction at the evening class held at the Cowper School. Those who were interested in education had for some time past felt that the great need in England was an improvement of middle-class schools. For the last fifty years great attention had been given to the improvement of primary schools; but until very lately it was felt that the middle-class schools were entirely wanting in all that was necessary to bring out their complete efficiency. But now a machinery was set on foot which was calculated to make them as efficient as they were capable of becoming. The Society of Arts' examinations seemed to be exactly the thing which those schools needed, for they furnished a means of encouragement, which was required in order to bring out the energies of both masters and pupils. Their great value consisted in this—that they supplied an inducement to young persons to study after they had left school; and this was absolutely necessary, for in this busy country it would not do to trust to the scholastic education given in schools. It was a very difficult thing for ordinary persons to educate themselves. There were instances of persons with great genius and untiring energy thoroughly educating themselves in spite of all difficulties; but ordinary persons required that facilities should be given them to cultivate their minds and acquire knowledge. And it was very gratifying to think that in this town there were such facilities. Among these was the Local Board of Examination, in connection with the Society of Arts, which afforded great encouragement to the young men of the town to pursue their studies with a view to prepare themselves for the great national examination conducted by the Society of Arts. And it should not be forgotten that the same examinations were also available to the fairer but equally clever sex. He hoped next year that his noble relative in the chair would have not merely to give certi-

icates to gentleman candidates, but that he would have the more graceful and agreeable task of giving certificates to lady candidates. He understood that next year the Society of Arts intended to invite competition for a certificate which would be specially applicable to the fair sex—a certificate in domestic economy. And although some men might compete for it, he did not think they were likely to be successful competitors. The present Local Board of Examination was in its commencement, but he quite agreed with the suggestion thrown out by Mr. Chester, that they should endeavour to enlarge their sphere by affiliating themselves with other towns and other institutions. In Lancashire and Yorkshire this was done on a large scale, and the other day, when he was in the Town-hall of Leeds, on an occasion similar to this—when the Prime Minister of England distributed certificates to those who had passed the Society of Arts' examinations—it was a grand sight, in that great focus of industry and wealth, to see so many persons interested in this matter; and he could not but feel that before long such machinery must produce great and lasting results. It had been truly said that it was not requisite now to say much generally about education. We had happily reached the time when it was not required to advance arguments to prove the necessity of education. The certificates which had been presented that evening were better than any arguments which the most eloquent orator could address to them, to show the value of education. When an employer wanted a young man of steady and accurate habits, with a certain amount of intelligence and concentration of mind—one who would not fritter away his time, but employ himself steadily and usefully—he did not exactly know how to discover the person he wanted. If he received and acted on testimonials, he would probably find that he had been misled by the good-nature or hasty judgment of some one interested in the young man. But suppose such an employer to meet with a young man who could produce one of the Society's certificates, he would say, "Here is the young man who has the qualities I desire. This certificate is a satisfactory proof that he has been spending his leisure hours in careful study; it shows he is not one of those who care more about amusements than the intellect, and he is evidently the sort of young man I want." These certificates, therefore, were not merely a credit to the young men who had gained them—not merely an ornamental possession—but they had in the market a value. They were in themselves, then, a great argument in favour of the usefulness of education. But he did not want to advocate the great help which such education as was now given to night schools, and at colleges for the people, would give to a young man who wanted to get on in life, because it was very obvious that any training of the mental faculties must assist a man in the business of life; but he would rather refer to the great advantage which a young man or a young woman must derive from acquiring a habit of spending his evenings in intellectual pursuits. He was quite sure that no one who competed for these prizes and certificates would be sorry for having done so, for those who failed to get those distinctions, as well as those who succeeded, would have gained something, inasmuch as they would have acquired the habit of reading and studying with a definite object. He hoped their young friends the successful candidates, Crouch and Hills, would be encouraged by their success to persevere and endeavour to obtain a prize on another occasion, and he should be rather disappointed if they did not succeed in doing so. At all events they had now been put forward as the champions of Hertford in intellectual competition, and the wishes of their friends should encourage them to persevere. He begged to move:—

"That the success attained by the candidates who have just received certificates is calculated to encourage the youths and young women of this and neighbouring towns to follow the commendable example which has been set them."

Mr. G. J. BOSANQUET, seconded the resolution.

The Rev. J. W. BLAKESLEY, in proposing a vote of

thanks to Mr. Chester and the other gentlemen who had addressed the meeting, said he could not refrain from expressing his satisfaction that though the number of candidates who had come up from this town to pass the Society of Arts' Examination was but small, yet their efficiency was such that they had obtained first-class certificates. If any persons present were inclined to think lightly of certificates for such attainments as reading fluently, writing correctly, and proficiency in arithmetic, he would ask them to consider how much mental effort was involved in the acquisition of such acquirements. They were the elementary branches of education, and must be acquired before any other branch could be pursued; but they were so common that we were induced to look upon them with a degree of estimation far inferior to that which they deserved. But he believed, if they went closely into the matter, that it would be found that a greater amount of mental effort was necessary for the purpose of obtaining thorough proficiency in arithmetic than was afterwards necessary for the purpose of becoming an adept in the differential calculus. And the importance of these elementary branches of education could not be over-estimated. He would take an illustration from military matters. On one occasion a great military general, observing that the manner in which a number of raw recruits were performing their preliminary evolutions caused some derision, remarked, "You may be surprised that so much pains are taken about this, but let me tell you it is the goose-step that conquers kingdoms." So it was with reference to education. With regard to the resolution he had to move, he said their thanks were particularly due to Mr. Chester, for no person could have explained to them, so fully and correctly as he had done, the advantages of the scheme of Examinations instituted by the Society of Arts.

The Hon. and Rev. G. HASTINGS seconded the resolution, which was agreed to unanimously.

A vote of thanks to the noble Chairman, proposed by Mr. J. J. GRIPPER (the Mayor), and seconded by Mr. H. GILBERTSON (the ex-Mayor), was carried unanimously; and a subscription having been entered into for the purpose of liquidating the debt due to the treasurer, the proceedings terminated.

#### DISC WHEEL.

On Tuesday, the 11th inst., an experiment of a novel mode of propulsion in steam navigation was made in a trip from Blackwall to Erith. The paddle-wheel and screw have hitherto been the means employed for utilising steam power in navigation, but Mr. James Jones Aston, of the Middle Temple, has, it appears, taken out a patent for propelling steam-ships by a very different contrivance. *A priori*, the arrangement invented by Mr. Aston is the very last that would suggest itself to an observer, and the inventor himself candidly admits that both practical men and men of science ridiculed his idea when first propounded. The steam-tug *Saucy Jack*—by no means a favourable boat for the success of the experiment—was propelled down the river at a rate of six knots an hour by the agency of a disc wheel, and with a far less expenditure of coal than if either paddles or screw had been used. The earliest objection to the locomotive was that it would not "bite" the rail, but the experiment soon proved the objection to be worthless. It is still more difficult to conceive what hold a thin metal or wooden plate, not striking the water horizontally or obliquely, but cutting into it edgewise, like a knife, can have of the water. The diameter of the disc used in the experiment was 14 feet, with about two feet in the water. The thickness of the plate was only three-eighths of an inch, and it is asserted that the thinner the plate the greater the power. The engines of the tug were 30-inch, with a stroke of 42. The greatest number of revolutions made was 47. In the trip down the river the pressure in the boilers was 6 lbs., and coming up 4 lbs., the speed attained being about six knots. With the paddles the tug used to make about eight knots,

but the expenditure of fuel was about 40 per cent. in favour of the disc. The conditions under which the trial was made were unfavourable to the experiment. She was not so readily started or so speedily stopped as the ordinary steamboats, but, perhaps, these disadvantages may disappear under more favourable circumstances. The disc may be constructed of metal or wood, or of both in combination, and several discs may be used on the same shaft, at convenient distances apart. There were five plates on each side in this experiment. The advantages of the disc, as enumerated by the inventor, are the following:—

1. It is less likely to be disabled in a storm or battle, and is therefore a safer propeller.
2. There are no paddles or blades to agitate the water, and the boat is free from vibration.
3. All the action of the propeller is in the direction in which the boat travels, and the motive power being more perfectly utilised, a much greater rate of speed may be attained than has hitherto been deemed practicable.
4. Its action is perpetual, and not intermittent.
5. There is no backwater, or loss of power on that account.
6. It is much less affected by wind and tide.
7. It is the only propeller well suited for canals and shallow rivers.
8. It may be used for small boats and other craft.
9. It may be worked with lower power, and at great saving of fuel.
10. It is of more simple construction, less costly, less liable to injury, and causes less wear and tear of the boat.

There were present to witness the experiment:—Capt. Lovell, of the Peninsular and Oriental Company; Mr. Wright, Assistant-engineer-in-chief to the Admiralty; Mr. Adams, Mr. Macroray, and Mr. Aston himself, the inventor and patentee.

#### ARSENIC IN PAPER-HANGINGS.

By H. LETHEBY, M.B., M.A., &c., PROFESSOR OF CHEMISTRY AND TOXICOLOGY IN THE MEDICAL COLLEGE OF THE LONDON HOSPITAL, AND OFFICER OF HEALTH OF THE CITY OF LONDON.

About three years ago public attention was directed to a circumstance, well known to men of science, that a large proportion of the arsenic sold in this country was used in the manufacture of a green pigment for paper-hangings. This fact was mentioned, on the authority of Dr. Taylor in the *Times* newspaper of the 6th of January, 1858, and it forthwith excited a very warm discussion. On the one hand, manufacturers declared that as arsenical pigments were not in themselves volatile, and were, moreover, fixed to the paper by adhesive materials, they could not evaporate so as to infect the atmosphere of rooms, and be a source of danger. In support of this statement there was the testimony of chemists, founded on actual experiment, namely, that arsenic could not be volatilized from paper at any ordinary temperature, and that it could not be detected in the atmosphere of rooms covered with arsenical papers.\* But on the other hand, there were the observations and experience of medical men, not merely in respect of the poisonous action of mineral green on those who are engaged in its manufacture, but also of the effects of the pigment on those who are occupied in handling green paper,† and who are exposed to its influence in rooms covered with it.‡ All of which

\* Dugald Campbell, *Phar. Journ.*, vol. xvii., p. 520. Abel, *Ibid.*, p. 556, and Phillips, *Ibid.*, vol. xviii., p. 25, and *J. Soc. Arts*, vol. vi., p. 606.

† Taylor, *Phar. Journ.*, vol. xvii., p. 556, and *J. Soc. Arts*, vol. vi., p. 665. Hind, *Phar. Journ.*, vol. xviii., p. 224. Binchardat, *Annuaire de Therap.*, 1846, p. 209.

‡ Hind, *Lancet*, 1857, vol. i., p. 193, and *Med. Times and Gaz.*, May, 1857, p. 521. Halley, *Times*, Jan. 11, 1858, and *Phar. Journ.*, vol. xvii., p. 428. *Ibid.*, vol. xix., 482. *Lancet*, Jan. 6, 1860, and *Med. Cir.*, Jan., 1860, p. 37. Lorinser, *L'Union Medicale*, No. 118 (Oct. 4, 1860), p. 26. Hassall, *Lancet*, Dec. 1, 1860, p. 535. Metcalfe, *Ibid.*, p. 535.



went to show that something is evolved from the pigment capable of producing the same class of effects as those which result from the operation of arsenic—namely, headache, dryness of the throat and tongue, nausea, irritation of the alimentary canal, great bodily depression, and various nervous disorders. Further investigation led to the discovery of arsenic in the dust of rooms covered with such paper,\* thus proving that, although the arsenical pigment was not volatile in a chemical sense, yet it became detached from the surface of the paper and was easily diffused through the atmosphere of the room. Still, as no actual or undoubted case of poisoning had been clearly traced to it, it was well enough argued that all the effects attributed to arsenical paper might have arisen from other causes. At last, however, the mischief has been followed to its source. A fatal case of poisoning by such paper has been the subject of medical investigation. The case is described by Dr. Metcalfe, in the *Lancet* of December 1, 1860, p. 535, and as the chemical part of the investigation has been in my hands, I here offer a brief outline of it.

Clarence W. King, the son of Mr. W. T. King, of Beresford-lodge, Highbury, a child aged three and a half years, was taken unwell during the morning of Thursday, Nov. 1. He refused his breakfast, complained of chilliness, and was sick. At ten o'clock in the morning he was attacked with convulsions, and at 11 he was seen by Dr. Metcalfe, who found him in a semi-comatose state. His bowels were much relaxed, and were acting involuntarily. On visiting him again in the evening, Dr. Metcalfe was told that there had been convulsive twitchings of the face, and that he had been very feverish. On the following day, at seven in the morning, Dr. Metcalfe was hastily summoned to see another child, a sister, aged two and a half, who had been violently convulsed, accompanied with loud shrieks and severe dysenteric discharge from the bowels. At that time, the little boy had become much worse; he was almost in a state of asphyxia; the surface of the body was cold, the pulse feeble, and the countenance livid. By the use of appropriate remedies he was somewhat relieved, but in the afternoon of the same day he was seized with violent tetanic convulsions; and from that time there were alternations of repose and convulsive action, until the little sufferer died. This occurred thirty-eight hours after the commencement of the attack. At first, Dr. Metcalfe did not suspect the real cause of the mischief, but when the second child was attacked, it occurred to him that the effects in both cases were due to the same cause, and were not the results of natural disease. His suspicions were further aroused by the circumstance that three months previously the children had been attacked in a similar manner, and had recovered after leaving the house for the sea-side. On inquiry, he was told that they had, within the last few days, been playing with toys that were kept in the cupboard of a room lined with green paper; and that a day or two previously they had been amused by helping to clear out the cupboard, and that the little boy had been observed to suck a piece of lace which was found there. A large portion of the paper was at once removed, and sent to me for examination. I found that it was an arsenical paper, containing nearly fifty-two grains of arsenite of copper on a square foot, and the pigment was so loosely attached to the paper that it was removed by the slightest friction. The dust from about five square inches of the paper was capable of producing all the symptoms observed in the boy, and the pigment from a piece six inches square would have sufficed for the death of two adult persons.

On the following day the child's body was examined, and the organs were found free from natural disease. The stomach and part of the liver were sent to me for analysis, and the results were the discovery of arsenic and copper in both these organs. So clear was the entire history of the

case—as the previous attack—the symptoms of arsenical poisoning—the simultaneous effects in both children—the discovery of the poison in the dead body—and the existence of arsenic and copper in such profusion on the paper of the cupboard—that the coroner's jury had no hesitation in returning a verdict that death had been caused by arsenic derived from the paper, and they added that the manufacturer had been guilty of very careless and culpable conduct.

In the course of the last year or two I have had referred to me many cases of suspected poisoning by green paper, and on examining the paper have invariably noticed that in such cases the arsenical pigment is but loosely attached to the paper, and no doubt the effects have been produced by the mechanical removal of the pigment and the diffusion of it through the atmosphere of the room. It is very probable that this effect is due in a great degree to the heat and the acid product of burning gas; for it has been frequently noticed that the poisonous action of the pigment is most clearly manifested in rooms lighted with gas. This may arise from the sulphurous acid, formed during the combustion of the gas, fixing itself within the porous texture of the paper, and becoming sulphuric acid, which soon destroys the adhesive matter that holds the pigment to the surface of the paper, and then the colour is easily brushed off.

All green papers are not equally poisonous, for as the shades of tint are produced by mixing carbonate of lime or chalk with the arsenical green, the proportion of arsenic may vary from a mere trace to many grains on a square inch of paper. The largest quantity which I have ever found has been in the proportion of fifty-nine grains on a square foot. A piece of this paper three inches and a-half square, has enough arsenic upon it to destroy human life. As far as my investigations have gone, the flock never contains arsenic, but is dyed with comparatively inert materials. It is the ground of the paper which is so dangerous: and here I may mention that any green paper which gives a deep-blue solution when it is steeped in liquid ammonia is suspicious, for it then contains copper, and in all probability arsenic likewise.

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## Home Correspondence.

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### ELECTRO-BLOCK PRINTING.

SIR,—The germ of Mr. Collins' process appears to have originated with Mr. J. Murdoch, who, on the 9th of March, 1855, patented a "method of enlarging or reducing designs, maps, and other similar articles, also apparatus or machinery to be employed in the same."

His mode of proceeding is thus described in his specification:—"A tracing of the design is made on a sheet of gelatine, by means of a steel point or tracer, and the surface is covered with black or other colour in paste or in powder. The surface is then wiped clean from the powder, which, however, remains in the lines made by the tracer. The tracing, thus prepared, is applied, with the black or coloured side downwards, to a sheet of caoutchouc (or other suitable elastic material), previously slightly moistened, and by means of pressure the design is transferred to the sheet of caoutchouc. This sheet is then stretched equally in every direction, until the design is enlarged to the desired dimensions. A sheet of paper, slightly moistened, is then placed upon the caoutchouc, and by pressure the design is transferred from the latter to the paper. If the design is to be reduced or contracted the caoutchouc is to be stretched before the design is transferred to it, and the design being transferred to it, the caoutchouc is allowed to shrink to the required dimensions and then transferred by pressure to the paper as before. Another method of producing the design on the caoutchouc is, to make a tracing of it on paper with a steel pen and

\* Taylor, *Pharmaceutical Journal*, vol. xviii., p. 553; vol. xviii., 417; and *Journal of the Society of Arts*, vol. vii., p. 98.

with ink composed of lamp-black burnt and pounded with molasses. The process may be carried out by any suitable apparatus, but the following is particularly claimed:—It consists of a smooth circular metallic table, supported on four columns. A circular tray, of somewhat larger diameter than the table, and situated beneath it, is moveable vertically by means of a screw working in the boss of the tray, and is guided by the four columns which pass through holes in the tray. The screw is turned by a train of wheel work. The sheet of caoutchouc is spread over the table, and secured to the tray by means of a ring bolted down upon the former. By drawing down the tray by means of the screw the required stretching of the caoutchouc is effected."

It is singular that the official report of a method so closely bearing upon his own should not have been observed by Mr. Collins when "all the authorities were carefully looked into before his patent was obtained."

I am, &c.,

WILLIAM STONES.

December 8th, 1860.

#### EFFECTS OF TEA AND COFFEE.

SIR,—It would be presumption on my part to enter the lists with Mr. Mann on the subject of his able and important paper, and it may appear equally presumptuous or me to question the authority of writers of such popularity and repute as Johnston and Lewes. I may, however, perhaps, be allowed to state a simple fact—that the authority of these writers is more than questioned by the most able investigators of these subjects. Johnston's statements are certainly positive and explicit, but he gives no detail of the experiments from which such conclusions are drawn.

From further inquiries I find that Dr. E. Smith's elaborate researches, published in the *Transactions of the Royal Society*, and which he is still continuing, tend directly to contradict Johnston's assertions; and as, no doubt, Johnston's volumes have deservedly a place in many libraries where your *Journal* is read, it will not be out of place, perhaps, again to call attention to the subject, which is certainly one of general interest and importance.

I am, &c.,

W. SYMONS.

17, St. Mark's-crescent, Regent's-park, Dec. 6, 1860.

### Proceedings of Institutions.

**MANCHESTER MECHANICS' INSTITUTION.**—DISTRIBUTION OF PRIZES AND CERTIFICATES.—On Monday evening, 30th November, the distribution of the prizes and certificates awarded by the Society of Arts to the successful candidates among the members of the Manchester Mechanics' Institution, at the recent examination, was made in the lecture room of the Institution. The proceedings were precluded by a social tea party of the members and friends. It was very fully attended. The chair was taken by Mr. OLIVER HEYWOOD, the President of the Institution, and the following gentleman were also present:—Thomas Bazley, Esq. M.P., M. Curtis, Esq. (mayor), Rev. William Gaskell, Mr. John Peiser, Professor Newth, Mr. Robert Rumney, Dr. Macauley (U.S. consul), Rev. William Waterhouse (Frestwich), Mr. H. R. Forrest, Mr. Lynde, Dr. Arne, Dr. John Watts, Mr. Samuel Greg, &c. &c. The CHAIRMAN said it was perfectly true that of the members of the Institution, probably only 300 or 400 were students in the particular class of subjects for which the Society of Arts gave certificates of merit; but he was anxious that they should all feel that they were members of one body. The successful students had done honour to the Institution; let the members do honour to them. Before he consented to preside, they had invited Mr. Robert Chambers, one of two distinguished brothers who had done so much solid

good for the industrious classes, and Dr. Goodwin, Dean of Ely, to take that position. Failing in obtaining the attendance of these gentlemen, he had heartily accepted the invitation to preside, being anxious to make the meeting a friendly social gathering of their own members. In round numbers, they had now 1,600 or 1,700 members. Deducting those who attended the day classes, the number that remained would be about 1,100; and knocking off again 100 or 150 honorary members, it would leave 800 or 900, who formed the real body of those who were to be found in the reading and class rooms. The number of adult members was steadily increasing, which was a gratifying fact, inasmuch as it removed a reproach which was often urged against these institutions, that they were rarely attended by those for whom they were principally established. He wished to see a spirit of sociality more cultivated among them, and a greater sympathy felt for one another; so that as each could exercise some influence, that influence should be used for the benefit of his fellows. Out of the 300 or 400 students in the subjects for which the Society of Arts gave certificates, they had never sent more than 36 for examination, and 21 was the highest number that had passed an examination. The highest number of papers sent in was 42. The certificates of merit awarded to the members of this Institution this year did not compare favourably with those of the previous year. In 1859, 35 certificates were gained, and in 1860, only 31. Some of the members who had distinguished themselves last year had again earned certificates on this occasion. The Chairman, after giving some practical advice as to the course of study the student should pursue, distributed the prizes and certificates.—Mr. RUMNEY then addressed the meeting, suggesting the establishment of additional classes for the study of Greek, political economy, and mental philosophy.—Professor NEWTH spoke of the importance of intellectual culture being brought within the reach of all, irrespective of creed or sect. Knowledge should be as free and open as the light of Heaven. It was gratifying to find so many young men taking part in the examinations, and after the labours of the day employing their leisure hours in hard study. Such young men might be excused if they preferred to walk in the lighter paths of literature; but he hoped that the number of earnest workers would increase.—Mr. SAMUEL GREG spoke of the great power of the principle of association.—The chair was taken by the Mayor, and Mr. Bazley, M.P., proposed a vote of thanks to the chairman, expressing a hope that many would be found ready to come forward to undertake the gratuitous management of classes in the subjects mentioned by Mr. Rumney.—Mr. JOHN HEYWOOD seconded the vote of thanks, which was carried by acclamation.—The CHAIRMAN having briefly responded, the proceedings were brought to a close.

### To Correspondents.

**ERRATUM.**—In last No. of *Journal*, page 48, col. 2, line 29, for "Railway audits," read "Rent-day audits;" and page 49, col. 2, line 17, for "maximum" read "minimum."

### MEETINGS FOR THE ENSUING WEEK.

- MON. ...British Architects, 8.  
Medical, 8½. Dr. Cockle, "On some points of the pathology, diagnosis, and Treatment of Insufficiency of the Aortic Valves, especially in connection with sudden death."  
TUES. ...Civil Engineers, 8. Annual General Meeting.  
Statistical, 8. Mr. J. T. Hammack, "On the International Statistical Congress, London, 1860."  
Pathological, 8.  
WED. ...London Institution, 7.  
Society of Arts, 8. Mr. A. J. Tansley, "On the Straw Plait Trade."  
Geological, 8. (Burlington House.) 1. Mr. T. F. Jamieson, "On the Geological Structure of the South-western Highlands of Scotland." 2. Rev. Hugh Mitchell, "On the Old Red Sandstone of Forfarshire and Kincardineshire."



THURS... Roy. Soc. Club, 6.

Numismatics, 7.

Linnean, 8. 1. Dr. Cobbold, "On Entozoa," with experiments. 2. Mr. M. T. Masters, "On Proliferation in Flowers," especially on the form known as Median Proliferation.

Chemical, 8. 1. Dr. Roscoe, "On the absorption of gases."

2. Dr. Bence Jones, "On sugar in urine."

Royal, 8½.

Antiquaries, 8½.

## PATENT LAW AMENDMENT ACT.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.

[From Gazette, December 7th, 1860.]

Dated 27th October, 1860.

2624. E. Booth and Major Booth, Manchester—Imp. in machinery or apparatus for finishing cotton, linen, silk, and other fabrics and materials.

Dated 6th November, 1860.

2732. E. Salisbury, Preston—An improved mixture or solution to be applied to pickers, pickli g-barde, straps, sole leather, and such like materials, in order to harden them and render them more lasting.

Dated 7th November, 1860.

2734. P. W. Rennel, Plumstead, Kent—Imp. in the method of, and apparatus for, treating green, semigreen, or undried vegetables or plants, in order to reduce their fibrous portions to a pulp, and also in the application of the said pulp when so made to the manufacture of paper.

Dated 13th November, 1860.

2772. V. V. Williams, 13, Crosby-row, Walworth-road, Surrey—An improved method of constructing stands for cameras, telescopes, surveying and other instruments, parts of which are applicable to other purposes.

Dated 15th November, 1860.

2800. J. Crooke, Manchester—Certain Imps. in the method or means of packing bales of goods or merchandise by means of the hydraulic press.

2802. A. Henry, Edinburgh—Imp. in rifled fire-arms.

Dated 16th November, 1860.

2814. H. G. Drewes, Chelsea—Imp. in propelling vessels, and in the apparatus or mechanism for the same.

2816. J. B. Mourguet, 8, Rue Boucher, Paris—Imp. in fire-arms and ordnance, and in projectiles used therewith.

2818. R. Bodmer, 2, Thavies-inn, Holborn—Imp. in machinery or apparatus for folding, and for folding and stitching sheets of paper and other material. (A com.)

Dated 17th November, 1860.

2830. T. M. Jones, Finchley-common, Middlesex—An improved apparatus for containing, igniting, and holding wax taper and other matches.

2832. H. MacFarlane, Glasgow—Imp. in cameras such as are used by photographers.

Dated 19th November, 1860.

2840. W. E. Newton, 66, Chancery-lane—Improved means of and apparatus for supplying air to the furnace or furnaces, or to the fire-rooms of steam vessels by means of the paddle wheels. (A com.)

Dated 20th November, 1860.

2842. R. A. Brooman, 168, Fleet-street—Imp. in stoppers for bottles, jars, and other like articles, parts of which are applicable as fastenings. (A com.)

Dated 21st November, 1860.

2846. H. D. Poobin, Oakfield-house, Salford—An improved material for building and other purposes.

2848. G. H. Call, Southampton—Imp. in the manufacture of manure.

2852. J. Crossley, Todmorden, Yorkshire—Imp. in means or apparatus for moulding iron or other metals.

2856. L. Hienemann, Broad-street-buildings, London—Improved means whereby engine drivers and persons in charge of, or attending to, railway trains, may obtain intelligence or information for increased safety in travelling.

Dated 22nd November, 1860.

2859. J. Henry, Buchanan-street, Glasgow—Imp. in printing warps and in apparatus for the same.

2860. T. H. Keble, Margate, Kent—Imp. in fire-arms.

2861. W. H. Ralston, Kestle, near Newcastle-under-Lyne—Imp. in the manufacture of hydrate of soda.

2863. W. F. Lovick, Thorpe, near Norwich—An improved bridle bit, which he terms a cheek-naffle bit, for restraining vicious or hard-mouthed horses with greater facility than with any other bit.

2865. D. Auld, Glasgow—Imp. in regulating the pressure and flow of fluids.

## PATENTS SEALED.

[From Gazette, December 7th, 1860.]

December 7th.

1416. G. Joslin, H. C. Joslin, and J. Joslin.	1538. A. Barnsley.
1427. W. Johnson & I. Adamson.	1558. R. Formby.
1430. P. Salmon.	1602. J. Johnson.
1431. H. Summelet.	1764. C. C. J. Guffroy.
1434. J. B. Farrar and J. Farrar.	1894. J. Lancelott.
1436. T. C. Yates.	2250. W. E. Newton.
1444. W. Harding.	2298. R. Mushet.
1473. W. Clark.	2426. B. Samuelson.
	2531. D. A. Leyshon.

[From Gazette, December 11th, 1860.]

December 11th.

1433. T. Redwood.	1708. W. E. Newton.
1435. J. Clarke.	1709. A. V. Newton.
1449. W. Weston.	1791. A. V. Newton.
1462. C. P. Coles.	1851. O. D. Hedley.
1463. K. A. Brooman.	1935. A. V. Newton.
1468. W. Dray and R. Gardiner.	2050. J. Newall.
1470. E. Deane and W. D. Marsh.	2347. J. H. Johnson.
1494. H. Wimbald.	2368. R. Mushet.
1540. J. H. Johnson.	2378. J. T. Robinson.
1553. H. Cartwright.	2441. J. H. Johnson.
1572. J. Sale.	2475. J. Silvester.

## PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.

[From Gazette, December 7th, 1860.]

December 3rd.

3005. J. Buchanan.	December 5th.
3067. J. M. Fréaud.	3020. W. T. Henley.

[From Gazette, December 11th, 1860.]

December 6th.

3030. J. Harris.	December 8th.
	3042. T. W. Willett.
	3053. S. Biggin and J. Biggin.

## PATENTS ON WHICH THE STAMP DUTY OF £100 HAS BEEN PAID.

[From Gazette, December 7th, 1860.]

December 4th.

2823. M. A. Muir.	December 6th.
2839. A. V. Newton.	2834. W. E. Ga'ne.
2912. J. B. Pascal.	2837. J. Bernard.

## LIST OF DESIGNS FOR ARTICLES OF UTILITY REGISTERED.

No. in the Registry.	Date of Registration.	Title.	Proprietors' Name.	Address.
4300	Nov. 9	Improved Pickle Fork .....	Sherwood and Barrett .....	52, Gt. Hampton-street, Birmingham.
4301	" 10	{ The Segment Table, being a Stand to apply to Endorsing and Embossing Presses .....	Maurice Samuel Johnson .....	{ 3, Wardell-terrace, Doctors'-com- mon, E.C.
4302	" 15	The Gun Knife-Cleaner .....	Robert James Ransome .....	Ipwich.
4303	" 15	{ Knight's Gold Leaf Receiver to prevent superfluous leaf being wasted .....	Charles Johnson Knight .....	23, London-wall, E.C.
4304	" 15	Improved Ship or House Lantern .....	P. J. Marshall .....	32, Treville-street, Plymouth.
4305	" 16	H. Fence Standard .....	Kennan and Sons .....	18 and 19, Fishamble-street, Dublin.
4306	" 19	{ A Drinking Flask, to be called the Riflemen's Flask .....	Farwig and Co. ....	65, Vattling-street, E.C.
4307	" 21	Safety Bow for Watch Pendants .....	Ellis, Brothers .....	High-street, Exeter.
4308	" 22	A Revolving Disc for Boot Graters .....	Gervaise Bushe .....	Glencaine Abbey, Lismore, Ireland.
4309	" 23	Paragon Trousers .....	William Chesworth Caldwell.	{ 19, King's-place, Commercial-road, St. George's East, E.
4310	" 27	Rack Pulley .....	William Tonks and Sons .....	Birmingham.
4311	Dec. 1	A Volunteer Sandwich Box .....	John Freeman .....	63, St. Martin's-lane, W.C.
4312	" 3	Cigar Holder .....	John Webb .....	21, Aldermanbury, E.C.
4313	" 4	Towel Holder .....	Richard Telford .....	15, Wrottesley-street, Birmi' gham.
4314	" 7	Adjustable Fastening for Plough Coulters.	Tasker and Sons .....	Waterloo Iron Works, Andover.
4315	" 8	Horse Cloth or Skirt .....	John Hargraves and Son .....	Carlisle.